

REMARKS

I. Introduction

Claims 28 to 42 are currently pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration of the present application is respectfully requested.

Applicants thank the Examiner for considering the previously filed Information Disclosure Statement, 1449 paper, and cited references.

II. Objections to the Specification

While Applicants do not agree with the merits of the objections, to facilitate matters, the Abstract and title have been amended herein without prejudice to obviate the present objections. Withdrawal of these objections is therefore respectfully requested.

III. Objections to Claims 28, 32, and 35

While Applicants do not agree with the merits of the objections, to facilitate matters, claims 28, 32, and 35 have been amended herein without prejudice to obviate the present objections. Withdrawal of these objections is therefore respectfully requested.

IV. Rejection of Claim 28 Under 35 U.S.C. § 102(e)

Claim 28 stands rejected under 35 U.S.C. § 102(s) as anticipated by U.S. Patent No. 6,088,788 (“Borkenhagen et al.”). It is respectfully submitted that Borkenhagen et al. do not anticipate claim 28 for at least the following reasons.

Claim 28 recites, inter alia, the following:

*... at least one of the plurality of pipeline units is configured to **reissue** to a downstream pipeline unit at least one of the instructions in one of the multiple threads after a stall occurs in the one of the multiple threads, the reissued at least one of the instructions **having been previously issued** to the downstream pipeline unit.*

The Office Action refers to column 4, lines 9 to 32, and figure 5 of Borkenhagen et al. as allegedly disclosing these features. However, the referenced section refers to suspension of execution of instructions of a first thread when a stall state, in which an instruction of the thread is not ripe for processing, is encountered with respect to the first thread, and then to continuation of the execution of instructions of the first thread at some point after the stall is resolved. The referenced section does not discuss passing of instructions of one or more threads between different pipeline units. The referenced section

does not discuss reissuing to a pipeline unit an instruction that had been previously issued to it. The referenced section merely indicates that execution of instructions of a thread is suspended and then resumed; the referenced section does not indicate that instructions of the thread are issued and then reissued. That is, the referenced section does not refer to reissuing to a unit an instruction that was previously issued to the unit. Indeed, any review of Borkenhagen et al. makes plain that Borkenhagen et al. do not disclose, or even suggest, a pipeline unit configured to reissue to a downstream pipeline unit an instruction that was previously issued to the downstream pipeline unit.

Since Borkenhagen et al. do not disclose, or even suggest, all of the features recited in claim 28, withdrawal of this rejection is therefore respectfully requested.

V. Rejection of Claims 29 to 36, and 38 to 42 Under 35 U.S.C. § 103(a)

Claims 29 to 36, and 38 to 42 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Borkenhagen et al. and U.S. Patent No. 5,907,702 (“Flynn et al.”). It is respectfully submitted that the combination of Borkenhagen et al. and Flynn et al. does not render unpatentable any of claims 29 to 36, and 38 to 42 for at least the following reasons.

To reject a claim under 35 U.S.C. § 103(a), the Office bears the initial burden of presenting a *prima facie* case of obviousness. *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish *prima facie* obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim features. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Claim 29 recites, inter alia, the following:

... an instruction queue ... configured [in a first operating mode] to pass each of a series of instructions ... to the at least one downstream pipeline unit ... and in a second operating mode ... to reissue to the at least one downstream pipeline unit at least one of the series of instructions ...

The Office Action refers to column 4, lines 9 to 32 of Borkenhagen et al. as allegedly disclosing these features. As set forth above in support of the patentability of claim 28, the referenced section of Borkenhagen et al. refers to suspension and resumption of execution of instructions of a thread. It does not disclose or suggest issuing an instruction to a unit and then reissuing the instruction to the unit. Since Flynn et al. do not do not cure the deficiencies noted with respect to Borkenhagen et al., the combination of Borkenhagen et al. and Flynn et al. does not disclose or suggest all of the features recited in claim 29. It is therefore respectfully submitted that the combination of Borkenhagen et al. and Flynn et al. does not render unpatentable claim 29.

Claim 32 recites, inter alia, the following:

. . . passing the issued instructions to a downstream unit . . . ; and . . . reissuing at least one of the issued instructions . . .

The Office Action refers to column 4, lines 9 to 32 of Borkenhagen et al. as allegedly disclosing these features. As set forth above in support of the patentability of claim 28, the referenced section of Borkenhagen et al. refers to suspension and resumption of execution of instructions of a thread. It does not disclose or suggest passing an issued instruction to a downstream unit and then reissuing the instruction. Since Flynn et al. do not do not cure the deficiencies noted with respect to Borkenhagen et al., the combination of Borkenhagen et al. and Flynn et al. does not disclose or suggest all of the features recited in claim 32. It is therefore respectfully submitted that the combination of Borkenhagen et al. and Flynn et al. does not render unpatentable claim 32.

Claim 36 recites, inter alia, the following:

. . . an instruction queue configured to pass issued instructions to a downstream pipeline unit . . . and store a copy of the issued instructions . . . the instruction queue further configured to reissue . . . at least one of the stored instructions . . .

The Office Action refers to column 4, lines 9 to 32 of Borkenhagen et al. as allegedly disclosing these features. As set forth above in support of the patentability of claim 28, the referenced section of Borkenhagen et al. refers to suspension and resumption of execution of instructions of a thread. It does not disclose or suggest passing issued instructions to a downstream unit, storing a copy of the passed instructions, and then reissuing at least one of the stored instructions. Since Flynn et al. do not do not cure the deficiencies noted with respect to Borkenhagen et al., the combination of Borkenhagen et al. and Flynn et al. does not disclose or suggest all of the features recited in claim 36. It is

therefore respectfully submitted that the combination of Borkenhagen et al. and Flynn et al. does not render unpatentable claim 36.

Claims 30 and 31 depend from claim 29 and therefore include all of the features recited in claim 29. It is therefore respectfully submitted that the combination of Borkenhagen et al. and Flynn et al. does not render unpatentable these dependent claims for the same reasons set forth above in support of the patentability of claim 29. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) (any dependent claim that depends from a non-obvious independent claim is non-obvious).

Claims 33 to 35 depend from claim 32 and therefore include all of the features recited in claim 32. It is therefore respectfully submitted that the combination of Borkenhagen et al. and Flynn et al. does not render unpatentable these dependent claims for the same reasons set forth above in support of the patentability of claim 32. *Id.*

Claims 38 to 42 depend from claim 36 and therefore include all of the features recited in claim 36. It is therefore respectfully submitted that the combination of Borkenhagen et al. and Flynn et al. does not render unpatentable these dependent claims for the same reasons set forth above in support of the patentability of claim 36. *Id.*

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

VI. Rejection of Claim 37 Under 35 U.S.C. § 103(a)

Claim 37 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Borkenhagen et al., Flynn et al., and U.S. Patent No. 5,381,533 (“Peleg et al.”). It is respectfully submitted that the combination of Borkenhagen et al., Flynn et al., and Peleg et al. does not render unpatentable claim 37 for at least the following reasons.

Claim 37 depends from claim 36 and therefore includes all of the features recited in claim 36. Since Peleg et al. do not cure the deficiencies noted above with respect to the combination of Borkenhagen et al. and Flynn et al., it is therefore respectfully submitted that the combination of Borkenhagen et al., Flynn et al., and Peleg et al. does not render unpatentable this dependent claim for the same reasons set forth above in support of the patentability of claim 36. *Id.*

Withdrawal of this rejection is therefore respectfully requested.

VII. Conclusion

In light of the foregoing, it is respectfully submitted that all pending claims are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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